

**REMARKS**

**I. Status of Claims**

Prior to this Amendment, claims 31-60 were pending. In this amendment, claim 31 has been amended to recite the limitations of claims 32 (that each separate layer has a thickness in the range from 0.5 nm to 20 nm), and 42 (that the “deposited coating layer” (i.e., the sum of the separate layers) has an initial thickness (i.e., before drawing) in the range from about 0.5  $\mu\text{m}$  to about 2.0  $\mu\text{m}$ ). Accordingly, claims 32 and 42 have been cancelled and dependency and grammar of claim 33 amended. Claim 59 has been amended to improve its clarity. Section 112 support is found in the application-as-filed, including, for example, the claims and pages 4 and 16. Thus, no new matter has been added. Claims 31, 33-41, and 43-60 are pending for consideration on their merits.

**II. Claim Objection**

The Office objects to an informality of claim 42. Office Action at 2. As noted by the Office, there was a typographical error, which was corrected when the limitation was added to claim 31. Applicants submit the objection is now moot and request that it be withdrawn.

**III. Section 112**

The Office rejects claim 59 under 35 U.S.C. § 112, second paragraph as indefinite. Office Action at 2. Applicants have amended claim 59 to improve its clarity. Applicants submit the rejection is now moot and request that it be withdrawn.

#### IV. Section 103 Rejections

A. The Office rejects claims 31-39, 41-45, and 50-53 under 35 U.S.C. § 103(a) as allegedly “being unpatentable” over U.S. patent application US 2003/0003319 to Doujak et al. (“Doujak”) in view of U.S. 5,403,419 to Yoshikawa et al. (“Yoshikawa”), for the reasons provided at pages 2-4 of the Office Action. Applicants respectfully disagree and traverse for the reasons set forth below.

With respect to obviousness, several basic factual inquiries must be made in order to determine the obviousness or non-obviousness of claims under 35 U.S.C. § 103. These factual inquiries, set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 U.S.P.Q. 459, 467 (1966), require the Examiner to:

- (1) Determine the scope and content of the prior art;
- (2) Ascertain the differences between the prior art and the claims in issue;
- (3) Resolve the level of ordinary skill in the pertinent art; and
- (4) Evaluate evidence of secondary considerations.

The obviousness or nonobviousness of the claimed invention is then evaluated in view of the results of these inquiries. *Graham*, 383 U.S. at 17-18, 148 U.S.P.Q. at 467; *see also KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1730, 82 U.S.P.Q.2d 1385, 1388 (2007).

The Office asserts that “Doujak teaches a process for producing a metal wire comprising a steel core and a metal coating layer in a radially outer position with respect to the steel core, the metal coating layer comprising an alloy made of copper and zinc.” Office Action at 3. The Office further states that Doujak teaches that the “steel core is coated by alternately depositing separate layers of copper and zinc onto said core and

drawing the coated core to form said alloy (e.g. brass).” *Id.* The Office admits that, “Doujak does not teach that each of the separate layers has a thickness not greater than 50 nm.” *Id.* The Office further asserts that, “[i]t would have been obvious to one of ordinary skill in the art at the time of invention by applicant to deposit the copper and zinc layers of Doujak using a plasma deposition method as suggested by Yoshikawa in order to form thin films having a thickness that have little influence on the properties of the final composite product.” *Id.*

**1. The Office Has Not Established a Motivation to Combine Doujak with Yoshikawa**

As articulated in *KSR*, part of the obviousness evaluation involves determining “whether there was an apparent reason to combine” the prior art elements relied upon to establish obviousness. 82 U.S.P.Q.2d at 1389. Applicants respectfully submit that the Office has not shown why one of ordinary skill in the art at the time of invention would have replaced the electro-deposition coating method of Doujak to form an alloy in view of Yoshikawa with any reasonable expectation of success.

While Doujak is directed to coatings comprising 3 to about 7 layers (Doujak at ¶¶ [0011] & [0045]), Yoshikawa merely discloses processes for “depositing a metal thin film” on a substrate. *See, e.g.*, Yoshikawa at col. 4 lines 1, 14, 27 (emphasis added); *see also*, col. 5, line 46 & col. 6, line 37. Indeed, Yoshikawa focuses exclusively upon the deposition of a *single* thin film layer, not multiple layers. *See id.* at col. 9, line 8 - col. 18, line 60. This is consistent with the fact that Yoshikawa teaches depositing alloys only as a single layer of alloy and not creating alloys by depositing the constituent metals and then forming the alloy, as in Doujak. *See id.* at col. 5, line 67 - col. 6, line 5;

col. 6 lines, 18-27. As such, there is nothing in Yoshikawa to suggest that the thin layer coating Yoshikawa teaches would be suitable as a substitute for the multi-layer coating process as used in Doujak. More importantly, Yoshikawa gives no reasonable expectation of success for deposition of multiple thin layers that can be processed to form an alloy, as required by Doujak.

Applicants also submit that one of ordinary skill in the art would have no motivation to modify Doujak in view of Yoshikawa because Yoshikawa solves a problem that is not present in Doujak. Namely, Yoshikawa is explicitly directed to eliminating adhesives, and more specifically to forming adequate bonds without use of cobalt in the rubber compositions used. Yoshikawa at col. 2, lines 12-46, col. 3 lines 26-37. As such, each and every example in Yoshikawa teaches deposition of a single cobalt thin film layer on a substrate. Yoshikawa at col. 9 line 8 - col. 18 line 60. Since Doujak uses neither adhesives nor cobalt in the rubber compositions (see e.g., ¶ [0016]), a person of ordinary skill in the art would not see Yoshikawa providing any improvement to Doujak.

Finally, Applicants submit that the Office misapplies a statement from Yoshikawa to justify combining that reference with Doujak. Specifically, the Office states that Yoshikawa teaches “using a plasma deposition method . . . in order to form thin films having a thickness that have little influence on the properties of the final composite product.” Office Action at 3. While Applicants believe the Office misconstrues Yoshikawa,<sup>1</sup> this statement, nevertheless, does not constitute a basis for combining

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<sup>1</sup> As discussed on Applicants’ specification at pages 2-3, the thickness of individual layers does play an important role in the product. Applicants discovered that using a high number of thin layers overcomes problems seen in prior art process, namely dishomogenous alloys.

teachings. One of ordinary skill in the art at the time of invention would only have motivation to modify the process in Doujak in view of Yoshikawa if doing so achieved some beneficial effect on the final composite properties. If the method of Yoshikawa has "little influence" on the product, there is no reason to utilize the method. *KSR*, 82 U.S.P.Q.2d at 1389.

## **2. Doujak and Yoshikawa Fail to Teach Each and Every Limitation in Applicants' Claims**

Applicants respectfully submit that, even if there was a motivation to modify the teachings of Doujak in view of Yoshikawa with any reasonable expectation of success, the combination still fails to teach each and every limitation in Applicants' claims. For example, Doujak and Yoshikawa do not teach coating with more than 25 layers where each layer is made of at least one metal component of said at least two metal components.

As amended, claim 31 requires that each separate layer has a thickness in the range from 0.5 nm to 20 nm, and that the sum thickness, *i.e.*, the initial thickness of the deposited coating layer before drawing, is in the range from about 0.5  $\mu\text{m}$  to about 2.0  $\mu\text{m}$ . These limitations mean that a minimum of 25 layers are to be coated, such as the nearly 1,200 layers coated in Applicants' examples.<sup>2</sup> *See* Application-as-filed at 23 lines 14-18, 25 lines 1-5.

In contrast, Doujak teaches the preferential application of only 3-5 layers by electro deposition. *See* Doujak at ¶¶ [0011] & [0045] While Doujak suggests that 7 or

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<sup>2</sup> If one deposits separate layers of the maximum thickness within the claimed range (*i.e.*, 20 nm), one would have to use at least 25 such layers to obtain the minimum initial thickness of the deposited coating layer within the claimed range (*i.e.*, about 0.5  $\mu\text{m}$ ).

more layers are possible, Doujak advises against using 7 or more layers for processing feasibility reasons. *See id.* at ¶[0045]; *see also*, application-as-filed at 2. Doujak discloses that these separate layers are to be between 100 and 500 nm each. *See id.* at ¶¶ [0013] & [0047]. Further, as discussed above, Yoshikawa only teaches the deposition of a single layer, ranging between 1 and 100,000 nm. *See, e.g.*, Yoshikawa at col. 4, lines 1, 14, 27, col. 6, line 30. Nothing in Yoshikawa suggests or teaches that the process is suitable for the application of 25 or more layers. Thus, neither Doujak nor Yoshikawa teach or suggest the coating of 25 or more layers that are from 0.5 nm to 20 nm thick, as required by claim 31. Similarly, neither Doujak nor Yoshikawa teach or suggest the coating of 50 or more layers, as required by claim 33.

For these reasons, Applicants respectfully submit that the Office's 35 U.S.C. § 103(a) rejection should be withdrawn.

B. The Office rejects claims 40, 48 and 49 under 35 U.S.C. § 103(a) as allegedly "being unpatentable" over Doujak in view of Yoshikawa and further in view of U.S. 4,859,811 to Sawada et al. ("Sawada"), for the reasons provided at pages 4-5 of the Office Action.

Applicants respectfully disagree, incorporate by reference their above arguments regarding Doujak and Yoshikawa, and submit that the rejection, as presented, does not render the claims obvious. Applicants respectfully request that this rejection be withdrawn.

C. The Office rejects claims 46 and 47 under 35 U.S.C. § 103(a) as allegedly “being unpatentable” over Doujak in view of Yoshikawa and Sawada, and further in view of U.S. 4,935,115 to Chambaere et al. (“Chambaere”), for the reasons provided at pages 5-6 of the Office Action.

Applicants respectfully disagree, incorporate by reference their above arguments regarding Doujak and Yoshikawa, and submit that the rejection, as presented, does not render the claims obvious. Applicants respectfully request that this rejection be withdrawn.

D. The Office rejects claims 54-60 under 35 U.S.C. § 103(a) as allegedly “being unpatentable” over Doujak in view of Yoshikawa and further in view of U.S. 4,952,249 to Dambre (“Dambre”), for the reasons provided at page 6 of the Office Action.

Applicants respectfully disagree, incorporate by reference their above arguments regarding Doujak and Yoshikawa, and submit that the rejection, as presented, does not render the claims obvious. Applicants respectfully request that this rejection be withdrawn.

## **V. Conclusion**

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration of this application and the timely allowance of the pending claims.


If the Examiner believes a telephone conference could be useful in resolving any outstanding issues, she is respectfully invited to contact Applicants' undersigned counsel at (202) 408-4275.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

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